

TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER ADOPTION OF AND AMENDMENTS TO REGULATIONS REGARDING REFORMULATED GASOLINE (PHASE 2 GASOLINE SPECIFICATIONS), AND THE WINTERTIME OXYGEN CONTENT OF GASOLINE

The Air Resources Board (the "Board" or "ARB") will conduct a public hearing at the time and place noted below to consider the adoption of and amendments to regulations to establish more stringent gasoline specifications for Reid vapor pressure ("RVP"), distillation temperatures, and sulfur, benzene, olefin, oxygen and aromatic hydrocarbon content starting in 1996, and to establish minimum and maximum oxygen content requirements for gasoline in the wintertime starting in 1992.

DATE: November 21, 1991

TIME: 1:00 p.m.

PLACE: Auditorium
State Building
107 South Broadway, Rm. 1138
Los Angeles, CA

This item will be considered at a two-day meeting of the Board, which will commence at 1:00 p.m., November 21, 1991, and will continue at 8:30 a.m., November 22, 1991. This item may not be considered until November 22, 1991. Please consult the agenda for the meeting, which will be available at least 10 days before November 21, 1991, to determine the day on which this item will be considered.

INFORMATIVE DIGEST OF PROPOSED ACTION

Sections Affected: Proposed adoption of Title 13, California Code of Regulations, sections 2258 and 2260 through 2271, and the "California Test Procedures for Evaluating Alternative Specifications for Gasoline," which would be incorporated therein by reference. Proposed amendments to Title 13, California Code of Regulations, sections 2250, 2251.5, and 2252.

Existing regulations of the Board impose various limitations on gasoline which are designed to reduce pollutant emissions from gasoline-powered motor vehicles. These include standards for Reid vapor pressure (a limit of 9 pounds per square inch (psi) through 1991 and 7.8 psi starting in 1992, applicable in varying months from March to October depending on the air basin); sulfur content of unleaded gasoline (maximum of 300 parts per million (ppm)); degree of unsaturation (maximum Bromine number of 30); lead content (restrictions on lead in leaded gasoline and gasoline represented as unleaded; starting in 1992 a general prohibition of leaded gasoline); manganese additive content (prohibition of adding manganese and manganese compounds to unleaded gasoline), and deposit control additives (gasoline must meet certification requirements pertaining to control of intake valve and port fuel injector deposits, starting in 1992). The more stringent RVP standards, the prohibition of leaded gasoline, and the deposit control additives requirements were approved by the Board in September 1990 as its "Phase 1 Reformulated Gasoline" specifications.

A. Phase 2 Reformulated Gasoline Regulations.

The proposed Phase 2 Reformulated Gasoline regulations are designed to achieve maximum reductions in the emissions of volatile organic compounds ("VOCs"), oxides of nitrogen ("NOx"), carbon monoxide, sulfur dioxide and toxic air pollutants from gasoline-fueled vehicles.

Overview of structure of regulations. The regulations would establish standards for seven gasoline characteristics--RVP, distillation temperature, and sulfur, benzene, olefin, aromatic hydrocarbon and oxygen content--applicable starting January 1, 1996. The regulations would also provide for the certification of alternative gasoline formulations resulting in equivalent emissions reductions based on motor vehicle emission testing. (The staff plans to subsequently propose a regulation providing for a similar certification of alternative gasoline formulations based on a predictive model.) The RVP standard would apply to all gasoline throughout the distribution system, including gasoline certified as an alternative formulation. The standards for the six characteristics other than RVP would include at least two tiers--an absolute limit ("cap") that would apply to gasoline throughout the distribution system (including alternative formulations), and a more stringent standard that would apply to gasoline when it is initially supplied from the producer or importer (gasoline qualifying as an alternative formulation would be exempt from this more stringent standard). In the case of the sulfur, benzene, and aromatic hydrocarbon limits, producers and importers would have an additional option in complying with the standards applicable to their gasoline when it is first supplied. They could choose either a flat limit or a more stringent limit that can be met on average through a "designated alternative limit" process.

The standards. The proposed "caps" applicable throughout the distribution system, the flat limits for gasoline when it is first supplied by producers and importers, and the standard that would have to be met by producers and importers under the "designated alternative limit" ("DAL") option would be as follows (references to producers include importers):

<u>Property</u>	<u>"Cap"</u>	<u>Flat Limit for Producer</u>	<u>Standard for Producer Under DAL Option</u>
RVP	7.0 psi *	NA	NA
Sulfur	80 ppm	40 ppm	30 ppm
Benzene	1.20% vol	1.00% vol	0.80% vol
Aromatic Hydrocarbons	30% vol	25% vol	20% vol
Olefins	10% vol	5% vol	NA
Distillation Temp.			
T90	330° F	300° F	NA
T50	220° F	210° F	NA
Oxygen	(min) 1.8% wt **	1.8% wt	NA
	(max) 2.7% wt	2.2% wt	NA

* Applicable during summertime control periods only.

** Applicable during wintertime control periods only.

The proposed RVP standard of 7.0 psi would apply to gasoline sold during the RVP control periods, which are identical to the periods in the existing RVP

regulation for 1992 and subsequent years (13 CCR section 2251.5; the only exception is that in both the new RVP regulation and section 2251.5, Ventura County would be treated the same as the South Coast Air Basin). Other aspects of the RVP standard would also be identical to section 2251.5, including imposition of the standard one month early for gasoline being transferred from a production and import facility.

In the case of the proposed oxygen content standards, the regulatory control periods for the 1.8% minimum requirement throughout the distribution system would be identical to the control periods for the 1992-1996 wintertime oxygen content regulation described below. Other provisions would be similar to those in the 1992-1996 regulation. In addition, persons would be prohibited from adding oxygenates to gasoline produced or imported by others, if the resulting blend has an oxygen content exceeding 2.2% wt. (Special provisions would apply if the gasoline had been reported as an alternative formulation.)

The existing regulations for the degree of unsaturation (13 CCR section 2250), Reid vapor pressure (Section 2251.5), and sulfur content of gasoline (Section 2252) would be amended to provide that they do not apply to gasoline sold starting January 1, 1996. The Reid vapor pressure regulation would also be amended to change all references of 7.8 psi to 7.80 psi. The sulfur content regulation will be amended to change the test method from ASTM 2622-82 to 2622-87.

Gasoline sold or supplied on or after January 1, 1996, would continue to be subject to the existing regulations pertaining to lead, deposit control additives, and manganese additives.

Designated Alternative Limits and Offsetting. A producer (or importer) would be required to elect whether to be subject to the sulfur, benzene, and aromatic hydrocarbon designated alternative limit option on an annual basis. A producer electing the DAL option could transfer from its production facility a batch of gasoline with sulfur and aromatic hydrocarbon contents exceeding the DAL option standards listed above as long as the batch is reported to the ARB and the producer within 90 days before or after transfers sufficient quantities of gasoline with lower designated alternative limits to offset fully the exceedances over the standards. In the case of benzene, credit accounts would be set up for each production or import facility, and benzene credits would be deposited and withdrawn for gasoline batches reported with designated alternative limits above or below 0.80%. There would be a maximum allowable amount of benzene credit in any account. If the credit balance is insufficient to allow the necessary withdrawal for gasoline over 0.80% benzene, the high-benzene batch could not be lawfully supplied from the production facility.

Notification of assignment of a DAL to a batch of gasoline, and associated information, would have to be received by the Executive Officer within specified times before the start of physical transfer of the batch from the production or importation facility. Late notifications could be permitted by the Executive Officer upon specified findings. A producer or importer would be authorized to enter into a protocol with the Executive Officer to specify how the DAL notification requirements are applied to the producer's or importer's operations. The regulations would include various additional provisions designed to insure the integrity of the DAL option.

Certified alternative gasoline formulations. A producer (or importer) could apply to have an alternative gasoline formulation certified by the Executive Officer if it is determined through vehicle testing to result in exhaust emissions equivalent to that achieved by gasoline meeting all of the flat limits described above applicable to producers and importers. A producer could notify the Executive Officer that a batch of gasoline was to be sold as a certified alternative formulation. This gasoline would not be subject to producer/importer limits listed in the table above; however, it would have to conform with all of the alternative specifications listed in the certification order.

The certification process would involve the testing of a fleet of at least 20 vehicles representative of categories prevalent in the on-road fleet. The alternative fuel would be certified if the difference in exhaust emissions of carbon monoxide, oxides of nitrogen, volatile organic compounds, potency-weighted toxic compounds, and the ozone-forming potential of volatile organic compounds between the alternative fuel and the Phase 2 reformulated gasoline does not exceed accepted statistical tolerance levels. This certification would be applicable for five years and would then be re-evaluated.

Other provisions. The following test methods would apply to determining compliance with the standards (other methods found by the Executive Officer to yield equivalent results could also be used):

RVP	ASTM D 323-58 or 13 CCR Section 2297
Sulfur Content	ASTM D 2622-87
Benzene Content	ASTM D 3606-87
	ARB MLD 116 (if ethanol is present)
Olefin Content	ASTM D 1319-88
Oxygen Content	ASTM D 4815-88
T90 and T50	ASTM D 86-82
Aromatic Hydrocarbons	ARB MLD 116

The specified sampling method would generally be the ARB's current procedures on sampling for RVP.

Variances from the standards would be authorized in essentially the same manner as in existing ARB regulations such as 13 CCR section 2252.

To help assure the applicability of the Health and Safety Code section 43016 "per vehicle" penalties, the regulations would provide that each retail sale of gasoline for use in a motor vehicle, and each supply of gasoline into a motor vehicle fuel tank, is also deemed a sale by any person who previously sold the fuel in violation of the substantive standards.

Specified quantities of gasoline used in research program could be exempted from the standards. Producers would be required annually to submit plans showing their schedule for coming into compliance with the 1996 standards.

The regulations would include various other provisions designed to facilitate administration of the reformulated gasoline program.

Comparable federal requirements. The 1990 amendments to the federal Clean Air Act ("FCAA") require the U.S. Environmental Protection Agency ("EPA") to

adopt regulations regarding reformulated gasoline. (FCAA § 211(k).) The regulations are to apply starting in 1995 in nine high ozone areas including the South Coast Air Basin, San Diego Air Basin and Ventura County. Other ozone nonattainment areas may opt-in to the program.

The federal regulations must require no NOx increase, a minimum 2.0% wt. oxygen content (with certain exceptions), a maximum 1.0% vol. benzene content, and limits on heavy metals. The FCAA also specifies performance standards for VOCs in the high ozone period and toxic compounds year-round. The performance standards are based on the reduction in emissions which must be achieved from baseline vehicles relative to emissions from the vehicles when operated on a specified baseline fuel. The performance standards represent the more stringent of either the emission reductions resulting from the use of a "formula" fuel, or a specified percent reduction--15 percent in 1995 increasing to 25 percent in the year 2000 (subject to a upward or downward adjustment, in no case less than 20 percent). EPA is directed to adopt regulations for the 1995 program by November 15, 1991. Based on the outcome of a negotiated rulemaking proceeding, ARB staff expects the regulations to identify a "simple model" allowing compliance in California with gasoline having an average summertime RVP of 7.1 psi (with a cap of 7.4 psi), an average benzene content of 0.95% vol. (with a cap of 1.3% vol.), an average oxygen content of 2.1% wt. (with a per gallon minimum of 1.5% wt. and potential caps), no heavy metals unless waived, and meeting specified toxic emissions requirements. Starting March 1997, gasoline would have to meet the requirements of a "complex" model which is to be developed.

B. Wintertime Gasoline Oxygen Content Regulation.

The 1990 amendments to the federal Clean Air Act require states with carbon monoxide ("CO") nonattainment areas with CO design values of 9.5 ppm or above based on 1988 and 1989 data to submit revisions to their State Implementation Plans ("SIPs") requiring oxygenated gasoline in these areas in the wintertime. (Clean Air Act § 211(m).) A substantial portion of California is included in these areas: Los Angeles-Anaheim-Riverside ("Combined Metropolitan Statistical Area ("CMSA")), San Francisco-Oakland-San Jose CMSA, Chico Metropolitan Statistical Area ("MSA"), Fresno MSA, Modesto MSA, Sacramento MSA, San Diego MSA, and Stockton MSA. The SIP revision is to require that gasoline sold for use in the areas contain not less than 2.7 percent oxygen by weight during the high CO winter period specified by the EPA Administrator, which is to be not less than four months. Waivers and delays are available under certain circumstances; the Administrator may waive the requirements in whole or in part upon a demonstration by the State to the satisfaction of the Administrator that the use of oxygenated gasoline would prevent or interfere with the attainment of a federal or state ambient air quality standard for any pollutant other than CO.

The staff proposes a regulation which would require, starting in July, 1992, that gasoline have an oxygen content of not less than 1.8 percent and not more than 2.2 percent by weight during the regulatory control periods for the various air basins as listed below. The minimum limit is proposed to implement federal Clean Air Act requirements and to reduce wintertime CO concentrations. The maximum limit is proposed to avoid increases in NOx emissions that would occur from higher concentrations of oxygen in gasoline. Increases in the emissions of NOx will contribute to violations of the

ambient air quality standards for ozone, PM10, and nitrogen dioxide. Also, NOx emissions contribute to visibility reduction and to acid deposition.

Data on the effect of oxygenates on NOx emissions is not totally consistent. Some data indicate that the NOx effects may be dependent to some extent on the type of oxygenate, while other data indicate that the oxygen content of the gasoline is the controlling factor. Staff is further evaluating data and expects to have the results of additional vehicle test programs available in the near future. If further evaluation indicates that adjustments to the proposed program are needed to avoid adverse emission impacts, staff will make such recommendations at the Board hearing.

The following regulatory control periods would be identified: South Coast Air Basin: September 1 through February 29; San Diego, South Central Coast, and Southeast Desert Air Basins: November 1 through February 29; all other air basins: October 1 through January 31. However, because of the higher ozone concentrations in September and October, the oxygen content standard for the control periods in those months would be a maximum of 2.2 percent by weight but no minimum.

It is expected that methyl-tertiary-butyl-ether ("MTBE") and ethanol will be the primary oxygenates in the near term. Ethanol is typically not added to gasoline before it reaches the terminal. The proposed regulation would apply throughout the distribution process. However, transactions before the final distribution facility would be exempt from the minimum oxygenate requirements if specified steps are taken to assure that the gasoline meets the oxygenate requirements before it is supplied from the distribution facility. In addition, there would be no liability for upstream transactions if the seller demonstrates that he or she has taken reasonably prudent precautions to assure the gasoline will only be delivered to a retail outlet when it is not subject to the oxygenate requirements.

Oxygen content would be determined by ASTM D 4815-88. The regulation would authorize variances in a fashion similar to the reformulated gasoline regulations.

AVAILABILITY OF DOCUMENTS AND CONTACT PERSON

The Board staff has prepared one Staff Report for the proposed Phase 2 reformulated gasoline proposal, and a separate Staff Report for the wintertime oxygenates proposal. Each Staff Report includes the initial statement of reasons for the proposed action and a summary of the environmental impacts of the proposal, if any. The staff has also prepared a Technical Support Document. Copies of the Staff Reports, and the Technical Support Document, and the full text of the proposed regulatory language may be obtained from the Board's Public Information Office, 1102 Q Street, Sacramento, CA 95814, (916) 322-2990. The Board staff has compiled a record which includes all information upon which the proposal is based. This material is available for inspection upon request to the contact person identified immediately below.

Further inquiries regarding criteria pollutant issues should be directed to Mr. Dean C. Simeroth, Chief, Criteria Pollutants Branch, Stationary Source Division, P.O. Box 2815, Sacramento, CA. 95812 (916/322-6020). Further

inquiries regarding toxic pollutant issues should be directed to Ms. Susan Huscroft, Chief, Toxic Air Contaminant Control Branch, Stationary Source Division, P.O. Box 2815, Sacramento, CA. 95812 (916/322-6023).

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred in reasonable compliance with the proposed regulations are presented below.

Based on cost data submitted to the Board, the staff has determined that the regulations will cost between 14 cents per gallon to 20 cents per gallon, if the entire cost is passed on to the consumer. The total capital investment costs to the refiners are estimated to be in the range of four to seven billion dollars. The staff estimates that implementation of Phase 2 specifications will result in ozone precursor emission reductions of about 190 tons per day in 1996. Emissions of CO will be reduced by about 1300 tons per day and sulfur oxides by 40 tons per day. The overall cost-effectiveness during the period 1996 to 2005, is estimated to be \$6.00 per pound to \$9.00 per pound for the criteria pollutants. Over the period 1996 - 2010, benzene emission reductions due to the benzene standards will result in 15-16 fewer lifetime cancer cases per year, with a cost per case avoided of \$30 - \$35 million. Other Phase 2 specifications will also result in reduced toxic emissions. There will be a total of about 30 potential lifetime cancer cases avoided per year, including the benefits of the benzene limit.

The staff is conducting an independent cost analysis using the Process Industry Modeling System refinery model. We expect that this analysis would be available by the Board hearing.

The cost of implementing the proposed wintertime oxygen content regulation is estimated to be approximately \$130 million in the 1992-3 winter control period, equivalent to about 3 cents per gallon of gasoline. The wintertime oxygen content regulation is expected to achieve about 1300 tons per day of CO emission reductions statewide during the 1992/1993 CO season, with a cost-effectiveness of about 50 cents per pound.

The Executive Officer has determined that the proposed regulations will not require small business, as defined in Government Code Section 11342(e), to necessarily incur any costs in reasonable compliance with the regulations. Under Section 11342(e), small businesses do not include petroleum refiners.

The Executive Officer has determined that the proposed regulatory action will not create costs or savings, as defined in Government Code section 11346.5(a)(6), to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code, or other nondiscretionary savings to local agencies.

In addition, before taking final action on the proposed regulatory action, the Board must determine that no alternative considered by the agency would be more effective in carrying out the purpose for which the action is

proposed or would be as effective and less burdensome to affected private persons than the proposed action.

SUBMITTAL OF COMMENTS

The public may present comments relating to this matter orally or in writing. To be considered by the Board, written submissions must be addressed to and received by the Board Secretary, Air Resources Board, P. O. Box 2815, Sacramento, CA 95812, no later than 12:00 noon, November 20, 1991, or received by the Board Secretary at the hearing.

The Board requests but does not require that 20 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing. The Board encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

STATUTORY AUTHORITY AND HEARING PROCEDURES

This regulatory action is proposed under that authority granted in sections 39600, 39601, 43013, 43018, and 43101 of the Health and Safety Code and Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District, 14 Cal. 3d 411, 121 Cal. Rptr. 249 (1975). This action is proposed to implement, interpret and make specific sections 39000, 39001, 39002, 39003, 39010, 39500, 39515, 39516, 41511, 40000, 43016, 43018, and 43101, Health and Safety Code; and Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District, 14 Cal. 3d 411, 121 Cal. Rptr. 249 (1975).

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Title 2, Division 3, Part 1, Chapter 3.5 (commencing with section 11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with nonsubstantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the regulatory language as modified could result from the proposed regulatory action; in such event the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15 days before it is adopted. Such modifications may include, but are not limited to, (1) adjusting the limits of oxygenates for the wintertime gasoline and requirements related to specific types of oxygenates, (2) setting limits for highly reactive compounds such as light olefins or heavy aromatic hydrocarbons, (3) specifying a predictive model to be used to certify an alternative gasoline formulation, (4) including modifications to the regulation to ensure that small refiners do not incur a disproportionate cost, (5) modifying specified limits as necessary pending the receipt of additional emissions test or cost data that shows that specified limits may be increased or decreased in a technologically and cost-effective manner, (6) modifying the provisions of the Test Procedures for Evaluating Alternative Specifications for Gasoline, (7) modifying the specified test and sampling

methods, and/or (8) modifying the designated alternative limit averaging provisions, reporting requirements, or banking provisions.

The public may request a copy of any such modified regulatory text from the Board's Public Information Office, 1102 Q Street, Sacramento, CA 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

Michael V. Schulz
for James D. Boyd
Executive Officer

Date: September 24, 1991